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NOVEMBER 2.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-eight members present.

Natural Hybrids. Quercus heterophylla, Mx.—Mr. THOMAS MEEHAN said, that in reference to the minutes of the last meeting just read, he might offer a few additional remarks on *Q. heterophylla*, and its connection with *Q. Phellos.* It was a subject of much interest equally to the mere botanist, the student of the origin of species, and to those who were investigating the frequency or otherwise with which hybrids occurred in nature.

He doubted, he said, whether hybrids often occurred naturally, and yet with the supposed abhorrence of plants to use their own pollen, and the consequent invitation which they extended to foreign pollen to fertilize them, it would be remarkable if some instances of hybridism did not occur, and perhaps remarkable that it did not occur oftener than it was supposed to do. It was such questions as these which gave the supposed hybrid origin of this oak its chief interest. In this connection he referred to the number of the *Revue Scientifique* then on the table, with an abstract of some remarks of M. Ch. Naudin before the Academy of Sciences of Paris, in which he says, that, of a large number of cases of hybrids that he had experimented with, only two retained their hybrid forms beyond two generations, and these two, grasses of the genus *Ægilops*, lost their respective forms, and reverted to that of the original female parent in four generations.

Mr. Meehan said that the original tree described by Michaux grew on the original Bartram estate. That tree had long since been destroyed; but there were now large trees, both at Bartram's and Marshall's, which were said by the late Col. Carr, who had married Miss Bartram, and up to comparatively recent years owned the garden, to be seedlings from that original tree. If this were correct, it would sustain Naudin's views, as these trees were so like the willow oak, as to be scarcely distinguishable. They only differ from the willow oak, in an occasional lobing of the leaf, a matter of little consequence in determining a species in this genus. It is more than likely, for reasons he would presently state, that William Bartram found young plants with lobed leaves growing, and transplanted them to his garden, believing them to have been seedlings of the *Q. heterophylla*, and not that they were from seed actually gathered from the tree.

In his description Michaux speaks of it as probably having *Q. imbricaria* for one of its parents, but there is no proof nor probability that this species ever grew in these parts. It could not then be considered in this relation. Moreover, hybrids, which cannot necessarily be abundant in nature, or there would not be the order we see, seldom come in more than one place, or if so, be exactly alike, and yet investigation shows this form to be by no means uncommon. Michaux rashly undertakes to say that there is not another tree to be found within a hundred miles of Philadelphia, yet Professor Buckley found one in a single day's botanizing in New Jersey near Camden, as recorded in our Proceedings; he had himself found it during one day's botanizing in Delaware as recorded in Gray's manual. Professor Leidy, Mr Smith, Mr. Cope, and Mr. Burk have found it in New Jersey, and there were now on the table specimens gathered by the latter gentleman near Woodbury, who had found two trees on this occasion, and had seen quite a number on other occasions. There is no doubt that when these casual visitors meet with trees, there is no great scarcity, and this is not in accordance with what we have to expect from hybrid trees.

Now as we see in these specimens of Mr. Burk, as well as in the original drawing in Michaux, the venation is wholly distinct from *Quercus Phellos*, and *Q. imbricaria*, and it is here that we find the best characters for .distinguishing the species of oak. There is a petiole nearly an inch long in these specimens, and also in Michaux's drawing, and more or less of a petiole in all the specimens he had seen; and, while the leaves of the *Q. Phellos* are thin, those of *Q. heterophylla* are coriaceous. A hybrid unites the characters of two parents, but there were no two parents here in the North which could unite and form a character like this, and so the supposed Bartram and Marshall progenies are out of the question.

In the monograph on *Cupuliferæ* by Alphonse De Condolle in the *Prodromus*, this oak is made a form of *Q. aquatica.* This suggestion, misled by the probably historical error in regard to the living Bartram tree, he had regarded as preposterous, and he believed most North American botanists had agreed with him. The forms of leaf most familiar to Quercologists, in *Quercus aquatica*, were the triangularly wedge-shaped, nearly sessile ones, common in the South on mature trees. But further north, and in young and vigorous trees south, the leaves were petiolate, approaching those now exhibited by Mr. Burk. Besides this there was in Michaux's figure an outline of one of these forms of leaves, which one could see by comparison with his figure of *Q. heterophylla* to be the same. The habit of growth of the trees of *Q. aquatica* is very distinct from that of *Q. Phellos*, and Mr. Burk reports these trees in New Jersey to be so distinct from the *Q. Phellos* among which they grow, that he can distinguish them a long distance away. The only remaining difficulties to students would be that De Candolle classes *Q. aquatica*, variety *heterophylla*, among the "*sempervirentes*," while we know it is deciduous, and then that it is a too high northern range for this species. The first difficulty he could dispose of. He had had in his garden for a number of years a *Quercus aquatica* from seed gathered near Vicksburg, where it was evergreen. But with him the same tree was deciduous. In regard to the range, De Candolle noted on the authority of Michaux that it grew in Maryland, and Mr. Canby reports it common in Delaware. This brings the range of the species up to our doors.

It is therefore clear that *Quercus heterophylla* is simply an outpost in the camp of *Quercus aquatica*, barely indeed ranking as a variety; and the result of our investigation is a tribute to the remarkable acumen of Alphonse De Candolle, who, with so little material before him, was able to guide us who had it all.

Hybrid Juglans.—Mr. MEEHAN, continuing his remarks on natural hybrids, exhibited a fruit from a tree growing near Meadville, Pennsylvania, and handed him by Alfred Huidekoper of that place. The fruit was of the oval form of *J. cathartica* (Butternut), but had the comparatively smooth surface of *J. nigra* (Black walnut), and was quite destitute of viscous glands. It was believed to be a natural hybrid between these two species.

Hybrids of Pyrus Sinensis.—Not exactly as natural hybrids, continued Mr. MEEHAN, but yet as hybrids without intention by man, were some pears he now exhibited, raised by Mr. Peter Kiefer of this place. For near twenty-five years Mr. K. had grown the *Pyrus Sinensis*, or Chinese sand pear, and for some years past had been fruiting seedlings from the original tree, and these have fruit uniformly the same as its parent, and as they seem to do in other parts of the world. Mr. Meehan exhibited a fruit and compared it with a figure in a recent number of the *Gardener's Chronicle* of London, then lying on the table, the two as similar as if the specimen had been used as copy for the sketch. Some years ago a Flemish beauty pear, a well-known variety of our common garden fruit, had flowered in close proximity, and since then pears mixed in character had been raised from this supposed to be hybrid seeds. The specimens exhibited by Mr. Meehan were much larger than the sand pear, the female parent, and as large as the average Flemish beauty of our markets; the red cheeks, and fine lemon color, being rather more beautiful than the average of Flemish beauty, though this kind is popular as a particularly handsome fruit.

NOVEMBER 9.

Dr. LECONTE, Vice-President, in the chair.

Twenty-three members present.

A paper entitled "On a New Genus of Lophobranchiate Fishes," by Edw. D. Cope, was presented for publication.